

**REMARKS**

Claims 1-86 were originally filed in the application. In response to a restriction requirement, claims 27-41, 64-75 and 81- 86 were withdrawn from consideration. The apparatus claims have been amended to replace intended use language with operative language. No new matter has been added by the amendments. Reconsideration of the application, as amended, is respectfully requested in view of the comments below. The Examiner's rejections are addressed in substantially the same order as in the referenced application.

**REJECTIONS UNDER 35 USC §102**

Claims 1, 42 and 76 stand rejected under 35 USC §102 over *Blades* et al. (US6111408). Claims 1, 42 and 76 are independent claims.

One embodiment of the present invention is an apparatus and method for characterizing a fluid sample obtained downhole, enhancing the polarization of the nuclear spins in the fluid, and using an NMR sensor for obtaining signals from the fluid.

As the Examiner has noted, *Blades* discloses an apparatus and a method for use in a borehole in an earth formation for obtaining nuclear magnetic resonance signals from a fluid obtained from the formation. The apparatus includes a nuclear magnetic resonance sensor and a processor for analyzing NMR signals obtained by the sensor from the fluid.

Claim 1 includes enhancing a polarization of nuclear spins of a nucleus in the fluid. Webster's Online Dictionary has the following definition of "enhance":

**2 : HEIGHTEN, INCREASE; especially :** to increase or improve in value, quality, desirability, or attractiveness

This is consistent with the language used in the specifications of the present application:

"Once the  $^{13}\text{C}$  is hyperpolarized the  $^{13}\text{C}$  NMR is executed with enhanced signal amplitude and enhanced signal-to-noise ratio.." See [0013]; and

"The carbon-13 signal is enhanced due to a process of polarization transfer between the nuclei of the polarized polarizing agent and the carbon-13 atoms."

See [0015]

The Examiner has identified element 26 of *Blades* as a device for enhancing polarization. Applicant respectfully disagrees. Element 26 in figure 1 of *Blades* is an antenna coil for a transmitter. The function of the transmitter, as is well known in the art, is to reorient nuclear spins. It does nothing to enhance the magnitude of the spin of a nucleus. Applicant further notes that while the transmitter may be used for refocusing of an aggregate of nuclear spins following dispersive effects, there is no enhancement of a nuclear spin *per se*.

In order for a prior art reference to anticipate a claimed invention, the prior art

reference must disclose each and every element of the claimed invention arranged as in the claim. This is clearly not the case in the present situation. Accordingly, applicant respectfully submits that claim 1 and claims 2-25 that depend upon claim 1 are patentable under 35 USC § 102 over *Blades*.

Applicant further notes that none of the prior art of record teaches or suggests the particular element of claim 1 discussed above (enhancing polarization of a nuclear spin of a nucleus in a fluid obtained from an earth formation). Accordingly, Applicant further submits that claim 1 and claims 2-25 that depend upon claim 1 are also patentable under 35 USC §103 over *Blades* and the prior art of record.

Claims 42 is n apparatus claim that includes the substantive elements of claim 1 discussed above. Accordingly, Applicant further submits that claim 42 and claims 43-63 that depend upon claim 42 are also patentable under 35 USC §103 over *Blades* and the prior art of record for the same reasons that claim 1 is patentable under 35 USC §103 over *Blades* and the prior art of record.

Claims 76 is n apparatus claim that includes the substantive elements of claim 1 discussed above. Accordingly, Applicant further submits that claim 76 and claims 77-80 that depend upon claim 76 are also patentable under 35 USC §103 over *Blades* and the prior art of record for the same reasons that claim 1 is patentable under 35 USC §103 over *Blades* and the prior art of record.

**REJECTIONS UNDER 35 USC §103**

Claims 2-26, 43-63 and 76-80 stand rejected under 35 USC §103 over *Blades* and further in view of *Pines et al.* (US6426058). Applicant notes that while *Pines* discloses many of the elements of the dependent claims of the application related to enhancement of polarization, there is no teaching or suggestion of use with measurements in a borehole of recovered formation fluids. Applicant respectfully submits that the patentability of claims 2-26, 43-63 and 76-80 have been addressed above in the discussion of the rejections under 35 USC § 102.

The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. 02-0429 (584-35879-USCP).

Respectfully submitted,



Dated: August 5, 2005

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